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## **Abstract**

Disclosed is a modular fluorescence sensor having the following general formula:

F1—
$$(CH_2)_n$$
— $N < (CH_2)_m$ — $Bd_1$ 
 $Sp > N$ — $(CH_2)_x$ — $An$ 
 $|$ 
 $(CH_2)_y$ — $Bd_2$ 

Where Fl is a fluorophore, N is a nitrogen atom,  $B_{d1}$  and  $B_{d2}$  are independently selected binding groups, Sp is an aliphatic spacer, and An is an anchor group for attaching the sensor to solid substrates. n = 1 or 2, m = 1 or 2. The binding groups are capable of binding an analyte molecule to form a stable 1:1 complex. In a preferred embodiment, the  $B_{d1}$  is  $R_1$ -B(OH)<sub>2</sub> and  $R_{d2}$  is  $R_2$ -B(OH)<sub>2</sub>.  $R_1$  and  $R_2$  are aliphatic or aromatic functional groups selected independently from each other and B is a boron atom. The present invention also provides methods of synthesizing a modular fluorescence sensor and its use in labeling solid substrates.